

REMARKS/ARGUMENTS

Favorable reconsideration of this application in view of the above amendment and following remarks is respectfully requested.

Claims 21, 23-26, 28-33, 45, 48, and 49 are pending. In the present amendment, Claims 21 and 26 are amended; Claims 46 and 47 are canceled without prejudice or disclaimer; and new Claims 48 and 49 are added. Support for the present amendment can be found in the original specification, for example, at page 10, lines 17-23, at page 14, lines 29-33, at page 16, lines 16-20, in Fig. 1, and in Claims 21 and 26. Thus, it is respectfully submitted that no new matter is added.

In the outstanding Office Action, Claims 21, 23-26, 28-31, 46, and 47 were rejected under 35 U.S.C. § 103(a) as unpatentable over Ghosh (U.S. Patent No. 5,190,450) in view of Yamamoto (U.S. Patent No. 6,874,942); Claims 26 and 28 were rejected under 35 U.S.C. § 103(a) as unpatentable over Fujii (U.S. Patent No. 5,660,480) in view of Yamamoto; Claims 32 and 33 were rejected under 35 U.S.C. § 103(a) as unpatentable over Ghosh in view of Yamamoto and Bishop (U.S. Patent No. 6,139,261); and Claims 33, 45, and 47 were rejected under 35 U.S.C. § 103(a) as unpatentable over Fujii in view of Yamamoto and Bishop.

Turning now to the rejections under 35 U.S.C. § 103(a), Applicants respectfully request reconsideration and withdrawal of these rejections, as next discussed.

Claims 21 and 26 recite, in part, “a coating...including a mixture of one or more wear-resistant materials selected from the group consisting of Si, cubic BN, TiC, WC, SiC, Cr₃C₂, ZrO₂-Y and TiB, and one or more solid lubricants selected from the group consisting of hexagonal BN, Cr₂O₃, WS₂ and BaZrO₄.”

The Office Action rejects Claims 21 and 26 based on col. 18, lines 28-30 of Yamamoto, which describes that “the hard coating layer comprises at least one material

of...TiC,...Cr₂O₃,...WC,...and cBN.” The Office Action asserts that “the phrase ‘at least one material of’ [in Yamamoto] means that combinations are included.”

However, Yamamoto does not disclose or suggest that the hard coating layer *must*, for example, include WC and Cr₂O₃. The materials listed as comprising the hard coating layer in col. 18, lines 28-35 of Yamamoto are each provided merely to improve “wear resistance” of the hard coating layer. Yamamoto is silent with respect to the listed materials being a solid lubricant or providing any lubricating function. Thus, a person of ordinary skill in the art based on Yamamoto would not combine WC and Cr₂O₃ (as the Office Action suggests as being obvious) because both materials are described in Yamamoto as equivalent materials to improve wear resistance. In other words, because of Yamamoto’s silence with regards to the listed materials being a solid lubricant, a person of ordinary skill in the art would have no motivation to combine WC and Cr₂O₃. See MPEP § 2143.01 (I).

Further, Claim 21 is amended to recite, in part, “engaging portions respectively formed on longitudinal ends of the rotation member on a cylindrical side surface around a circumference of the rotation member, the engaging portions being held by the housing and rotating relative to the housing.” Ghosh describes a gear pump 10 for high viscosity materials including a shaft 22 (asserted in the Office Action as corresponding to the claimed rotation member) disposed within a body 12 of the pump 10. As shown in Fig. 3 of Ghosh, the right-side longitudinal end of shaft 22 is free and not supported by the body 12 of the pump 10. Further, Fujii describes a bearing spindle including a main shaft 1 disposed within a bearing housing 2. As shown in Figs. 1, 4, and 5 of Fujii, the right-side longitudinal end of shaft 1 is free and not supported by the bearing 2. Thus, Ghosh and Fujii do not disclose or suggest “engaging portions respectively formed on longitudinal ends of the rotation member” and “held by the housing and rotating relative to the housing,” as recited in Claim 21.

With respect to the rejection of Claim 26, Claim 26 is amended to recite, in part, “a supporting portion configured to rotatably support each longitudinal end of the rotation member such that the rotation member rotates relative to the housing.” As discussed above with respect to Claim 21, Ghosh and Fujii both describe one end of the shaft being free. Thus, the cited references do not disclose or suggest each of the features of Claim 26 and it is respectfully requested that the rejection of Claim 26 be withdrawn.

Therefore, reconsideration and withdrawal of the outstanding grounds for rejection of independent Claims 21 and 26, and all claims dependent thereon, is respectfully requested.

Claims 23, 28, 32, and 33 depend on Claims 21 and 26, and thus are believed to be patentable for at least the reasons discussed above with respect to Claims 21 and 26. Further, it is respectfully submitted that the remaining cited reference (Bishop) does not cure the above-noted deficiencies of Ghosh, Fujii, and Yamamoto. Thus, it is respectfully requested that the rejections of Claims 23, 28, 32, and 33 be withdrawn.

New Claims 48-49 are added by the present amendment. Support for new Claims 48-49 can be found in the original specification, for example, in Claims 21 and 26. Thus, it is respectfully submitted that no new matter is added. New Claims 48-49 depends on Claims 21 and 26, respectively, and thus are believed to be patentable for at least the reasons discussed above with respect to Claims 21 and 26. Accordingly, it is respectfully requested that new Claims 48-49 be allowed.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. A notice of allowance is earnestly solicited.

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